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Abbring, J.H.; Ours, J.C.

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## Serie research memoranda

SELLING NEWS AND ADVERTISING SPACE;  
THE ECONOMICS OF DUTCH NEWSPAPERS

J.H. Abbring  
J.C. van Ours

Research Memorandum 1993-10

February 1993



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**SELLING NEWS AND ADVERTISING SPACE;  
THE ECONOMICS OF DUTCH NEWSPAPERS**

J.H. Abbring  
J.C. van Ours

10 February 1993

Vrije Universiteit  
Department of Economics  
De Boelelaan 1105  
1081 HV Amsterdam  
The Netherlands



### *Abstract*

*This article presents an analysis of developments over the period 1968-1991 on both the readers and advertising market of Dutch newspapers. We are interested in the characteristics of both markets and in the interactions between the two markets. Our analysis shows that newspaper revenues are mainly influenced by macro-economic developments. A negative influence of tv advertising on revenues from the advertising market exists, but is fairly limited. Besides, newspaper industry as a whole seems to be able to deal with these threats to their revenues by raising the real prices they charge for their products. However, in some circumstances problems may arise for specific newspapers and groups of readers. Whether or not these problems should induce the Dutch government to give financial support to the newspaper industry is a matter of policy evaluation. Our analysis suggests that government intervention should not aim at stimulating the branch as a whole, but to give firm specific financial support in order to maintain newspaper diversity.*



## 1. Introduction

(Daily) newspapers are products which appear at least six times per week in a new 'model' and are delivered at homes of subscribers or sold piece by piece.

Newspapers have salient characteristics which distinguish them from other 'regular' products (Reddaway (1963)). First, newspapers are sold on two different markets: copies are sold to readers and advertising space is sold to advertisers. Second, a newspaper is perishable and loses its original character rapidly. A newspaper today is a piece of wrapping paper tomorrow. Third, while the demand for copies is fairly stable over the week, month or even year, the demand for advertising space fluctuates even within a week.

Apart from these distinguishing characteristics which have an economic content newspapers are different from other products since they represent the free press. To ensure economic independency of newspaper the Dutch government has given financial support to the Dutch newspaper industry on several occasions. In the seventies the newspaper industry receive money to compensate for income losses due to the introduction of television and radio advertising. At the end of the 1980s newspaper industry again was compensated for income losses as tv advertising was increased. In the beginning of the 1990s commercial television (RTL4) was introduced in the Netherlands.

As a source of information newspapers over the past decades had to compete with an increasing number of new media like television, teletext, and video. As a medium for advertising there was increased competition due to the introduction of radio and tv advertising in the late 1960s and due to the increasing importance of Direct Mail. Nevertheless, over the past 25 years real revenues of newspapers have approximately doubled. The share of revenues from selling copies has increased from some 35% in the mid 1960s to 45% in the beginning of the 1990s. The readers market is much more stable than the advertising market, which shows a clear cyclical pattern.

There are clear interactions between the readers market on which copies are sold and the market for advertisements. The interactions go both ways. First, there is the downward spiral: if revenues from selling advertisement space go down, there are less funds available to make a quality newspaper. Therefore the newspaper will become less attractive to readers and the number of readers declines. The number of advertisements will further reduce because there are less readers, etcetera (Engwall(1975)). Second, if revenues from advertisements decline, newspapers may compensate this on the readers market by an



increase in the price per copy. If the price elasticity is very small this will not cause a substantial decline in the number of readers. The first interaction implies that there is a positive influence of advertising revenues on circulation. The second interaction implies that there is a negative influence of advertising revenues on consumer price per copy. In theory the two relations may exist both at the level of individual newspapers and at the market level. In practice the first mechanism is more relevant at the level of individual newspapers, referring to competition within markets. If competition on advertising revenues comes from other mass media the second mechanism is more relevant at the market level, referring to interaction between the readers and advertising market of the newspapers.

This article presents an analysis of developments over the period 1968-1991 on both the readers and advertising market of Dutch newspapers. We are interested in the characteristics of both markets and in the interactions between the two markets. Our analysis shows that newspaper revenues are mainly influenced by macro-economic developments. A negative influence of tv advertising on revenues from the advertising market exists, but is fairly limited. Besides, newspaper industry seems to be able to overcome these threats to their revenues by raising the real prices they charge for their products.

This article is set up as follows. In section 2 we describe the structure of the Dutch newspaper industry and discuss developments over the past decades. In section 3 we model both newspaper markets. Section 4 presents the estimation results. In section 5 we look at the near future using the estimation results for some model simulations, looking at the future. Section 6 concludes. Finally, the appendix describes the symbols and data used in the analysis.

## 2. Structure and developments

### 2.1 Structure

In 1991 18 independent publishers were selling 45 editorially independent newspapers in the Netherlands. These newspapers can be classified by area and time of distribution. 8 newspapers are sold nationwide, of which 5 appear in the early morning, and 3 in the late afternoon. The other 37 newspapers emphasize regional news coverage and are only sold regionally.

Newspapers are differentiated with respect to number of copies sold, price per copy, and advertising rates.<sup>1</sup> Table I gives information on the individual national newspapers and the aggregate of regional morning and evening newspapers. Regional newspapers account for more than half of the total number of copies sold. Clearly, newspaper circulation is varied, and, not surprisingly, advertising rates are equally varying, for both national and regional newspapers.

**Table I** Some key figures on Dutch newspapers

| <b>national morning newspapers</b> | <b>circulation<br/>subs.rate<br/>(1991)</b> | <b>quarterly<br/>adv.rate<br/>(Df,1991)</b> | <b>10000 mm<br/>(Df,1990)</b> |
|------------------------------------|---|---|-------------------------------|
| De Telegraaf                       | 720,900                                     | 73.40                                       | 985                           |
| Algemeen Dagblad                   | 413,900                                     | 74.40                                       | 606                           |
| De Volkskrant                      | 342,100                                     | 81.75                                       | 506                           |
| Trouw                              | 120,500                                     | 92.60                                       | 230                           |
| Nederlands Dagblad                 | 25,663                                      | 81.15                                       | 61                            |
| <b>national evening newspapers</b> |   |   |                               |
| NRC Handelsblad                    | 241,900                                     | 99.50                                       | 596                           |
| Het Parool                         | 100,800                                     | 74.40                                       | 262                           |
| Reformatisch Dagblad               | 53,097                                      | 77.65                                       | 88                            |
| <b>total national newspapers</b>   | <b>2,023,860</b>                            | <b>81.86</b>                                |                               |
| local morning newspapers           | 1,036,842                                   | 77.96                                       |                               |
| local evening newspapers           | 1,568,679                                   | 76.61                                       |                               |
| <b>total local newspapers</b>      | <b>2,605,521</b>                            | <b>76.96</b>                                |                               |
| <b>Overall</b>                     | <b>4,629,381</b>                            | <b>77.79</b>                                |                               |

Explanatory note: Overall figures do not include Het Financieele Dagblad.  
Source: De Perscombinatie

National newspapers are geographically competing. Therefore, differences in circulation have to be the result of diversity with respect to non-geographical features like socio-economical, political and religious background of the readers. The diversity in circulation of regional newspapers is more obvious since they are hardly

<sup>1</sup>Note that information about the advertising volume of individual newspapers is lacking.

geographically competing. Therefore, the number of copies sold is largely determined by the size of the population in the relevant region. There is not much difference in subscription rates between individual newspapers. About 78 Dutch guilders is charged for a three months subscription. Obvious exceptions are the so called 'quality newspapers', NRC Handelsblad, Trouw, and De Volkskrant, which charge their readers upto 25% more. Quality newspapers distinguish themselves by relatively low absolute price and income elasticities, probably because of the fact that they have relatively wealthy subscribers. Price differences between these and the other newspapers are quite stable over time. Obviously, there is not much price competition between Dutch newspapers. In fact, price increases are always coordinated.

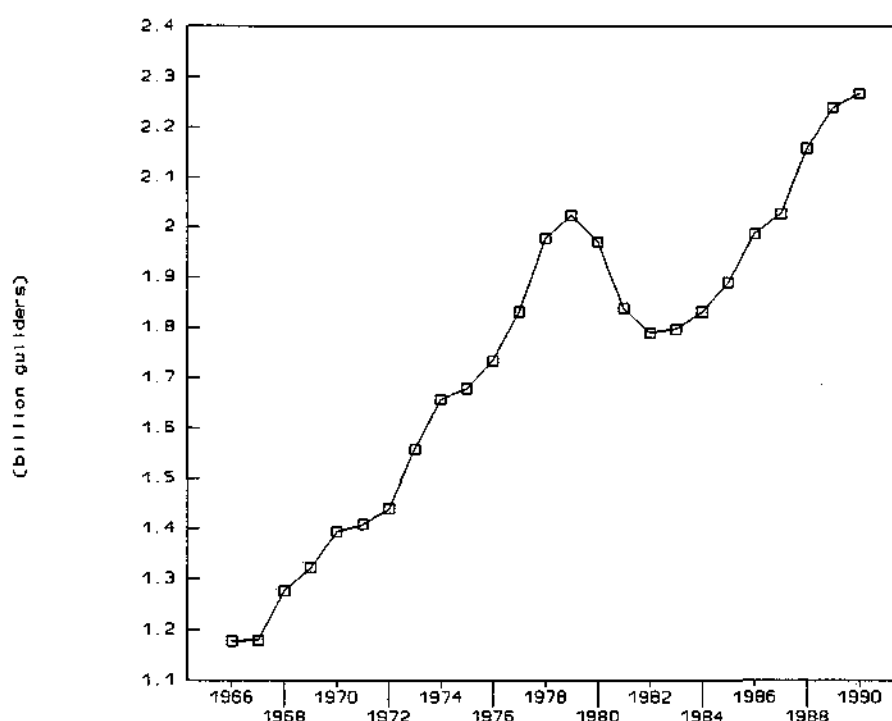
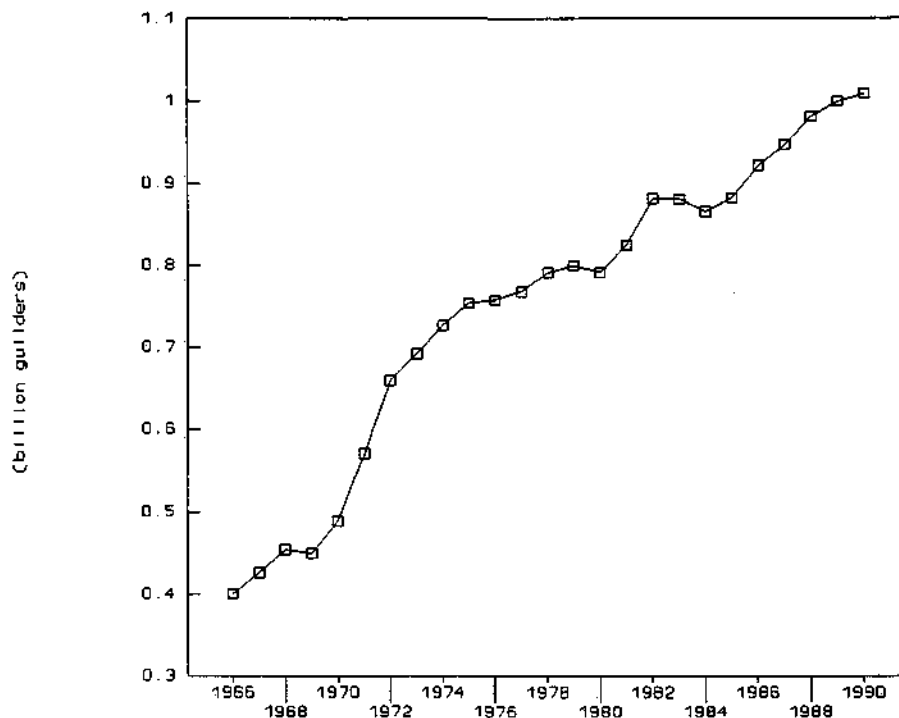


Figure 1 Aggregated newspaper revenue (Df 1980)



**Figure 2 Real copy sales (Df 1980)**

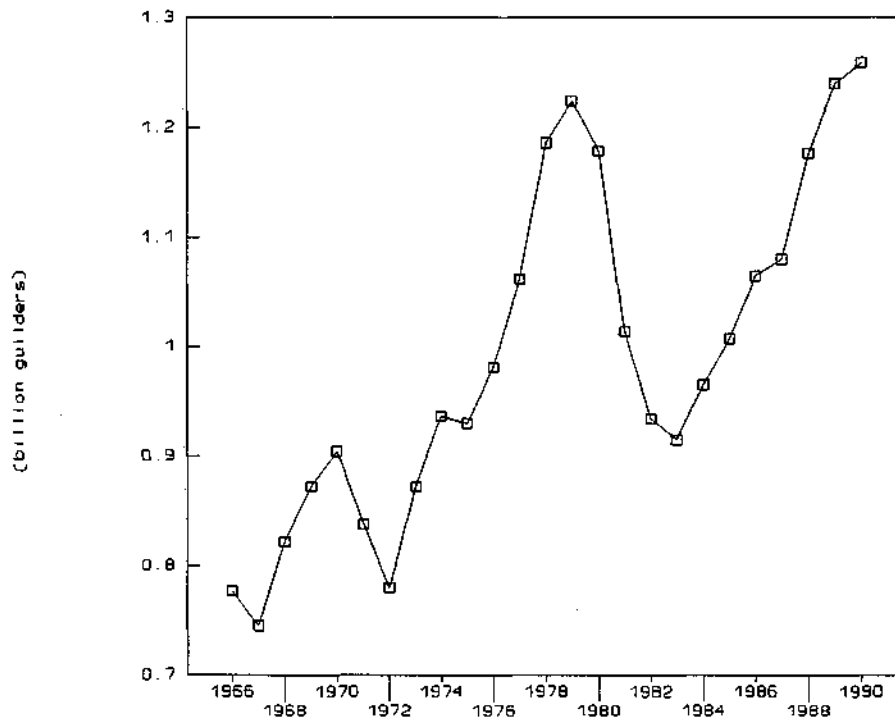
## 2.2 Developments<sup>2</sup>

Newspaper revenues have increased substantially over the past decades. Figure 1 shows that real aggregated newspaper revenues have doubled up to almost 2.3 billion 1980 guilders in 1990 in the period 1966-1990. Only the 1980s recession temporarily turned this growth. The readers and advertising markets separately haven't been equally responsible for this growth. As shown in figure 2 the revenues from the readers market have gradually increased over the past decades. A decrease in real copy sales is a rare event. The developments on the advertising market are very much different. As shown in figure 3 real advertising revenues fluctuate substantially. Severe declines in real

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<sup>2</sup>Source of data used in this section: De Nederlandse Dagbladpers. Nominal figures are deflated by CPI (source: Centraal Planbureau).

advertising revenues have occurred in the recession periods 1970-1972 and 1979-1983. Comparing the information in figures 1, 2, and 3 it is obvious that the cyclical sensitivity of total newspaper revenue originates from the cyclical sensitivity of advertising revenues.



**Figure 3** Real advertising revenues (Df 1980)

From a comparison of figures 2 and 3 one may derive that the increase in copy sales accounts for 60% of total revenue growth. Figure 3 shows the development of total newspaper circulation, which increased from 3.6 million in 1968 to 4.8 million in 1990. Again, there are obvious cyclical downward movements in the period 1970-1972 and 1980-1983. Apart from these periods there is a clear upward trend in newspaper circulation. Comparing figures 2 and 4 shows that while there are fluctuations in circulation there are no similar fluctuations in real copy sales. There is obviously an anticyclical pattern in real subscription rates: a decline in circulation is compensated by an increase in subscription rate. From this we conclude that newspapers do not face a severe price competition on their readers market with other

massmedia. There may be competition between newspapers and other sources of information like radio, television and magazines, but this competition is not price determined. In times when circulation goes down newspapers raise the subscription rates, thereby not just compensating for the loss in revenue but usually even increasing revenues from the readers market.

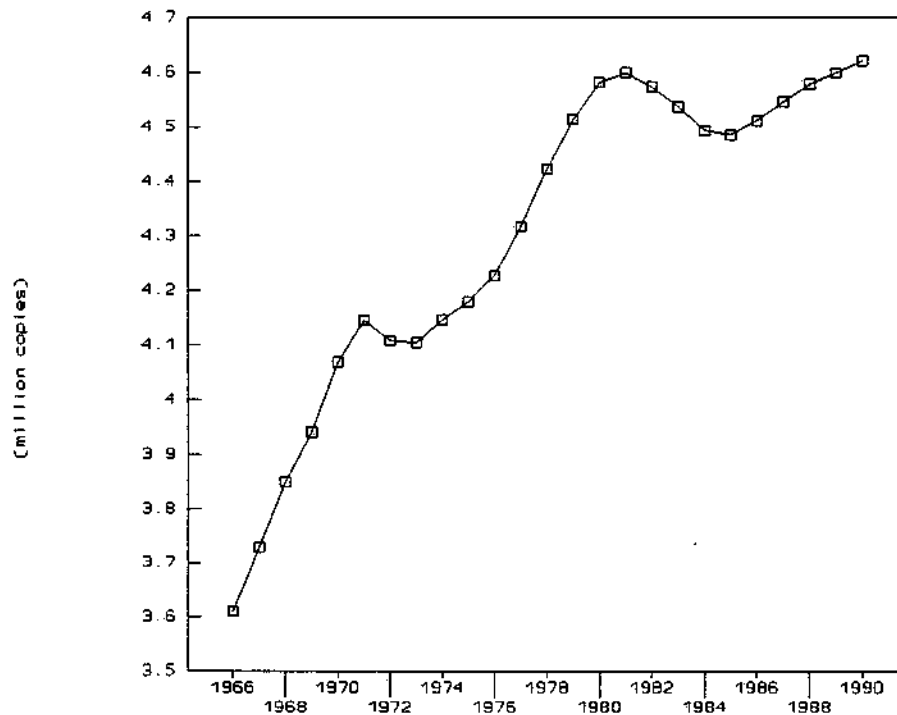


Figure 4 Number of copies sold (mid-yearly figures)

Most of the fluctuations in advertising revenues originate from fluctuations in the volume of advertising space sold. On the advertising market declines in volume are not compensated by rises in advertising prices. Advertisers have several means of reaching (potential) consumers: radio, television, magazines, direct mail. On the advertising market price competition is more severe than on the readers market. Nevertheless, the greater part of the growth of newspaper advertising revenue comes from a 30% real price increase over the period.

In the past decades there have also been major changes in the structure of the Dutch newspaper industry. Growing real revenues had

to be divided among a declining number of publishers and newspapers. The number of independent publishers decreased from 34 in 1970 to 21 in 1990. The number of newspapers decreased from 54 in 1970 to 47 in 1990. Empirical research shows that this concentration in the Dutch newspaper market mainly took place in the periods 1970-1975 and 1980-1982 (Alsem et al.(1982,1988)).

### 3. Modelling the newspaper markets

#### 3.1. Previous empirical research

Most of the empirical research on the economics of Dutch newspaper markets is inspired by the Dutch policy of compensating newspapers for their loss in advertising revenue due to the introduction of tv (and radio) advertising in 1967. Therefore, most research focuses on that part of the advertising market that newspapers and tv advertising (STER) have in common: the advertisement for branded goods and services.

Studies of the supply side of this market were initiated by Van der Chijs (1976). He fits a linear regression model for branded goods advertising in newspapers to data from the period before 1967. He then uses that model for ex post prediction of advertising revenues after 1967 in absence of tv advertising. He concludes that the damage to newspaper revenues amounts 55-60% of tv advertising revenues. Van Zoonen (1987) uses time series techniques on monthly revenue figures. She notices a considerable effect of tv advertising on newspaper revenues. Recently, Driehuis (1987,1989) comes to the same conclusion, regressing branded goods advertising on macroeconomic investment, the real advertising rate, real STER spending, and the volume of direct mail advertising. Van Ours (1989) however shows that after a slight change in the model specification the effect of tv advertising on newspaper revenues largely disappears. Alsem et al.(1989a) focus on the demand side of the advertising market using a poll among advertisers to predict of advertising revenues. Their prediction, a fall in newspaper advertising in 1989, didn't show to be accurate. However their paper deals with a fundamental question: to what extent are tv and newspaper advertising substitutes and to what extent does tv advertising induce an expansion of the entire advertising market. Ettèr (1980) argues that there is hardly any substitution possible between these advertising media, and thus

concludes that the damage to newspapers is overestimated.

Van Ours (1983) and Alsem et al.(1988) further investigate this question on a lower level of demand side aggregation. Their qualitative analysis shows that television and newspapers are substitutes for branded goods advertising, but are not competing for the favour of other advertisers. Hellingman (1985) concludes from a poll among advertisers that advertising managers are likely to reallocate funds to tv advertising when more commercial television is introduced in the Netherlands.

Aggregate revenues on the readers market are investigated by Van Ours (1983). He distinguishes volume and price developments. Linear regression reveals a price elasticity of demand of -0.18 and a spending elasticity of demand of 0.30 in the period 1971-1982. This figures are supported by Alsem et.al (1989b) for the period 1972-1988. Because the price elasticity is larger than -1, revenues can be increased by raising the price. Indeed, newspaper businesses appear to have passed increased costs and decreased advertising revenues on to the consumers. Van Ours shows that every percent of advertising revenue decrease leads to a 0.6% real price increase.

One interaction between the two markets has already been mentioned: the negative relation between advertising income and the subscription rate. It is remarkable that prices aren't raised up to a aggregate revenue maximizing level, i.e. up to a level at which the price elasticity equals -1. Of course, this could be the result of a competitive market structure. Another possible explanation is a negative side effect of price increases on the advertising volume through a decrease in circulation. Together with a reverse effect, the already mentioned negative effect of advertisement revenue decline on editorial quality, and thus on circulation, we have a 'circulation spiral' (Engwall(1975)). This relation is, however, not likely to hold on the market level: there have to be enough substitution possibilities with other news media, which is doubtful. Alsem et al.(1982) test for the circulation spiral on the level of segments, i.e. using circulation totals of the national and regional, morning and evening newspaper market segments. They conclude there is a spiral on this level. When advertising revenue drawbacks, however, are passed on to the consumer, the circulation spiral is partly compensated.



### 3.2. A theoretical model

We use a model of Dutch newspapers in which revenues on both the readers and advertising market are specified. By definition total revenue is equal to the sum of both separate revenues:

$$(1) \quad y = y_1 + y_a$$

$y$  = total aggregated real newspaper revenue

$y_1$  ( $y_a$ ) = real revenue on the readers (advertising) markets

On the readers market we distinguish price and volume:

$$(2) \quad y_1 = p_1 q_1$$

The supply of copies is assumed to be elastic. Therefore, circulation is entirely determined by demand, which is assumed to be positively correlated with aggregate consumer income, and negatively correlated with price. Furthermore, we investigate for an 'editorial quality' relation with advertising revenues. Although this so called circulation spiral probably only exists at the level of the individual newspapers we investigate its relevance at the aggregate level:

$$(3) \quad q_1 = f_{q_1}(C, p_1, y_a, u_{q_1})$$

+   -   +

$C$  = volume of aggregate consumption

$p_1$  = real subscription rate

$u_x$  = error component ( $x = q_1, p_1, y_a, u_{q_1}$ )

As was mentioned in the previous section, newspaper circulation is not likely to be very price elastic. This facilitates the passing on of cost increases and revenue drawbacks to consumers. Therefore, the price, i.e. the average subscription rate, is specified as a function of cost and revenues on the advertising market. We assume that increases in the cost of producing newspapers cause increases in the price of newspapers. Likewise, revenues from the advertising market are assumed to have a negative effect on the price per copy. Thus, we end up with price equation

$$(4) \quad p_l = f_{pl}(k, y_a, u_{pl})$$

+ -

$k$  = real newspaper cost indicator

On the advertising market we also distinguish price and volume. More precisely, we consider a (weighted) price of advertising space per copy and the (aggregated) volume of advertising space per copy. We distinguish two types of advertising products: for branded goods and for other advertising. For practical reasons prices for both advertisement types are assumed to be the same:

$$(5) \quad y_a = p_a(q_{bg} + q_{ot})$$

$p_a$  = real advertising rate

$q_{bg}$  ( $q_{ot}$ ) = volume of branded goods (other) advertising

There are obvious substitution possibilities for newspaper advertisements, but newspapers also have characteristics that distinguish them from television or magazine ads. Only newspaper advertising for branded goods is expected to be affected by tv and direct mail advertising. However, because newspaper advertising and advertising using other media are to some extent substitutes, we expect a negative response to increases in advertising rates. In connection with that, there may be some positive effect of prices, or negative effect of volumes of competing advertising media on the demand for newspaper advertising.<sup>3</sup> As the demand for tv advertising (STER) has always exceeded the supply, we expect the STER volume (capacity) to be of more importance than STER prices. Additionally, increased price competition may have a negative effect on advertising rates, which further increases the negative effect of competition on the advertising market on newspaper advertising revenues.

We expect both advertising volumes to be procyclical. Branded goods advertising may be stimulated by increasing investments, or by the need to get a hold on increasing consumer expenditure. Advertising for other goods includes varying categories like personel and classified advertising. Some are stimulated by investment- consider for instance

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<sup>3</sup>Other competing advertising channels, like sports sponsoring and movie theatre commercials, have too small a turnover to be of any importance.

the effect of investment in human capital on personel advertising, others by consumer expenditure- possibly some classified ads. We could also consider a more direct determinant of the volume of job advertising, i.e. the number of vacancies. Reliable information on this quantity is lacking, however. Instead, we will assume a negative influence of unemployment on other advertisement, which is justified by the well known UV relation.

Furthermore, we assume a positive effect of circulation on advertising rates as defined above, since a higher circulation makes newspapers as an advertising medium more attractive to advertisers. Besides, increasing circulation may be accompanied by increasing advertising volumes (per copy), also because of the higher attraction to advertisers. This implies a positive correlation of circulation and advertising volumes.

Finally, we will investigate the possible existence of a positive compensation effect of cost increases on advertising rates. Contrary to the readers market, we do not expect the advertising market to give any opportunity for compensation for losses that are specific to newspaper businesses, i.e. losses on the readers market.

Summarizing we get:

$$(6) \quad q_{bg} = f_{bs}(p_a, C, I, q_c, p_c, q_l, u_{bs})$$

- + + - + +

$$(7) \quad q_{ot} = f_{ot}(p_a, C, I, U, q_c, p_c, q_l, u_{ot})$$

- + + - - + +

$$(8) \quad p_a = f_{pa}(q_l, k, p_c, u_{pa})$$

+ + +

$I$  = volume of aggregate investment

$U$  = unemployment

$q_c$  = volume of advertising in competing media (f.i. tv)

$p_c$  = price of advertising in competing media

#### 4. Estimation results

We did not have a priori ideas about the dynamic specification of (3),(4),(6),(7), and (8), so we simply tested for level of integration, cointegration and several lagged reaction patterns (Engle and Granger(1987)). The same holds for the stochastic specification of the  $u_x$ . Chang (1977) and Gemill (1980) give some microeconomic directions for specifying functional forms  $f_x$ , using Box-Cox transforms of all variables.

Taking first differences appeared to be necessary. Furthermore, the results of the analysis appeared to be robust with respect to functional specification. Therefore we use the specification that allows us to interpret the coefficients directly as elasticities: we estimate (3),(4),(5), and (8) with the variables specified in annual percentage increases.

Estimation of the circulation equation (3) over the period 1968-1991 gives:

$$(3') \quad q_t = 0.00 + 0.56 q_t(-1) + 0.19 C(-1) - 0.15 p_t, \\ \quad \quad \quad (0.59) \quad (4.98) \quad \quad (3.29) \quad \quad (4.37) \\ R_a^2 = 0.82, \text{ and } Q_9 = 3.04(0.98)$$

The equation fits the data well. The Q-statistic indicates that the stochastic specification, a white noise disturbance term, is satisfying. The short term income elasticity of copies demand equals 0.19. The short term price elasticity equals -0.15. Long term elasticities are 2.27 times as large. Clearly, the elasticities have the right sign, and do not differ much from those reported by Van Ours (1983) and Alsem et al.(1989b).

Like in previous research, we find a remarkably small price elasticity of copies demand. This supports the theoretical specification of price equation (4): revenues on the readers market can be increased by raising the price. Finally, adding advertising revenues didn't improve the estimation results, indicating that one half of the circulation spiral, and thus the spiral itself, doesn't exist on the market level.

Estimation of price equation (4) for the period 1968-1990 gives<sup>4</sup>

$$(4') \quad p_t = 0.02 - 0.43 y_a(-\frac{1}{2}) + 0.58 k, \\ (3.96) \quad (5.60) \quad (4.08)$$

$$R_a^2 = 0.63, DW = 2.05, \text{ and } Q_9 = 6.54(0.77).$$

Again, the empirical fit is satisfying, as are the stochastic properties of this equation with white noise disturbance. Equation (3') implies an elasticity of price with respect to advertising revenues of -0.43, and an elasticity with respect to costs of 0.58. Clearly, newspaper businesses are passing financial drawbacks on to their readers. The size of the effect of advertising revenues on price corresponds to the effect found by Van Ours (1983).

An eye-catching detail is the delayed reaction of price on advertising revenue changes. This might be the result of slow information processing. Daily advertisement acquiring business doesn't reveal the latest developments in advertising revenues. Revenue figures only become available at the end of an accounting period. Probably, there is some anticipation on developments when they are first detected, but full adjustment can only be achieved when more or less official figures are published.

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<sup>4</sup>The model is estimated with ordinary least squares. All variables are in relative mutations. Absolute t-values are given in parentheses.  $R_a^2$  is  $R^2$  adjusted for the number of observations.  $Q_a$  is the Box-Pierce Q-statistic, and is chi-square distributed with n degrees of freedom (see for instance Harvey, 1981, sections 1.5 and 7.5). The probability is added in parentheses. DW is the Durbin-Watson statistic of first order autocorrelation.

Estimation of advertising volume equations (6) and (7) for the periods 1968-1990 and 1968-1991, respectively, gives<sup>5</sup>

$$(6') \quad q_{bg} = \begin{matrix} 0.03 & + & 0.71 & I(-\frac{1}{2}) & - & 0.92 & p_a & - & 0.32 & q_{ster} \\ (1.86) & & (2.92) & & & (3.59) & & & (2.69) \end{matrix}$$

$$- 0.16 d_{1971}, \text{ with} \\ (2.94)$$

$$R_a^2 = 0.51, DW = 1.72, \text{ and } Q_{10} = 4.53(0.92);$$

$$(7') \quad q_{ot} = \begin{matrix} - & 0.01 & + & 0.27 & I & + & 1.72 & C & - & 0.59 & p_a(-1) \\ (0.55) & & (1.46) & & & & (4.21) & & & (2.01) \end{matrix}$$

$$- 0.20 U, \text{ with} \\ (3.42)$$

$$R_a^2 = 0.85, DW = 1.93, \text{ and } Q_{10} = 3.32(0.97).$$

Again, only white noise disturbances had to be used to get satisfying statistical properties. Branded goods advertising is negatively affected by television commercials: every 1% increase in the volume of tv advertising leads to a 0.32% percent decrease in the volume of this newspaper advertising. As was to be expected, no effect on other advertising was found. Direct mail advertising does not seem to play an important role at all: no clear influence from direct mail advertising revenues on newspaper advertising volumes was found.

The cyclical effects of investments and consumer expenditure on branded goods (elasticity = 0.71) and other goods (elasticity = 1.99 altogether) advertising volumes is much larger than the cyclical effects of consumer expenditure on copy demand (long run elasticity = 0.34). Newspapers have smoothened their procyclical movement through the years, by raising the share of copy sales in total newspaper revenues. Furthermore, branded goods advertising is much less affected by the economic climate than other advertising is. This may be explained by the fact that other advertising includes job advertising, which has a very

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<sup>5</sup>A dummy had to be introduced to eliminate an extreme residual.  $d_{s-t}$  is a dummy, such that  $d_{s-t} = 1$  from year  $s$  upto year  $t$ , and  $d_{s-t} = 0$  elsewhere.

high cyclical sensitivity. Advertising rate changes translate into a sharp decline in advertising volumes, with price elasticities of -0.92 and -0.42, respectively. Although this indicates a positive relation between advertising rates and revenues, the first elasticity does not differ from -1 significantly, so rate changes may as well have no effect on branded goods advertising revenues at all. Demand for branded goods advertising is more price elastic than that for other advertising, probably because of better substitution possibilities. This supports the idea that newspaper businesses are not likely to compensate for revenue losses through price increases on the advertising market. However, we stick to the thought that cost increases are partly reflected in prices.

Estimation of advertising rate equation (8) was somewhat cumbersome. Dummy variables had to be included to cope with an unexplainable outlier in 1974, and a difference in real advertising rate growth between the periods before and after this year. Estimation for the period 1963-1990 then yields

$$(8') \quad p_a = 0.00 + 0.49 k(-1/2) - 0.05 d_{63-73} + 0.16 d_{1974}, \text{ with} \\ (0.85) \quad (2.10) \quad (3.65) \quad (7.20)$$

$$R_a^2 = 0.77, DW = 1.83, \text{ and } Q_{10} = 9.14(0.52),$$

Stochastic properties of both equations are quite good. Unlike the second period, the period 1963-1973 had a downward sloping trend in real advertising rates. Compensation for cost increases also takes place through increases in the advertising rates. The compensation effect seems to be somewhat smaller than that on the readers market. This might be due to the fact that the advertising market is more price elastic than the readers market, which makes price raises on the advertising market less profitable. Introducing circulation as explanatory variable in equation (8') did not improve the estimation results. This indicates that, although circulation figures may matter in competition between individual newspapers, aggregate circulation is not a weapon in competition with other media.

Finally, adding variables concerning radio and tv advertising to (8') gave no additional explanation of the advertising rate. Thus, the increased competition with tv advertising has not affected advertising rates. Since we found a significant effect on the advertising volume, we conclude that increased tv advertising has had a significant effect on

branded goods advertising revenues (elasticity = 0.32). This is supported by earlier research by Van der Chijs (1976), Driehuis (1987,1989) and Zoonen (1987).

Table II summarizes the estimation results in terms of elasticities.

Table II Elasticities

|           |    | C    | I    | U     | p     | $q_{\text{other}}$ | k     | y          |
|-----------|----|------|------|-------|-------|--------------------|-------|------------|
| $q_b$     | SR | 0.19 |      |       | -0.15 |                    | $p_i$ | 0.58 -0.43 |
|           | LR | 0.43 |      |       | -0.34 |                    |       |            |
| $q_{b_s}$ |    |      | 0.71 |       | -0.92 | -0.32              | $p_a$ | 0.49       |
| $q_{b_t}$ |    | 1.72 | 0.27 | -0.20 | -0.59 |                    |       |            |

Explanatory note: dependent variables in rows; independent variables in columns. p means own price; y means revenue on other market; SR means short run; LR means long run.

## 5. Looking at the future

From the estimation results presented in section 4 it is obvious that the revenues of newspapers are to a large extent influenced by macro-economic developments. The growth of consumer income influences the circulation of newspapers, and, together with the growth of investment, the advertising volumes. Furthermore, the labour market situation appears to have considerable effects on job advertisements. Apart from that, the development of production costs, through subscription and advertising rates, and television advertising are important. Finally, there is interaction between the readers and the advertising market. If advertising revenues go down, the price per copy goes up. In turn, this reduces the circulation somewhat.



Table III Simulated developments in the nineties

|  | high economic growth    |                            | low economic growth     |                            |
|--|-------------------------|----------------------------|-------------------------|----------------------------|
|  | expansion<br>tv advert. | no expansion<br>tv advert. | expansion<br>tv advert. | no expansion<br>tv advert. |
| <b>%-change in 1992-2000 of</b>                |                         |                            |                         |                            |
| <b>readers market</b>                          |                         |                            |                         |                            |
| circulation ( $q_l$ )                          | 3.0                     | 4.3                        | -4.8                    | -3.5                       |
| price ( $p_l$ )                                | 18.3                    | 13.4                       | 21.1                    | 15.3                       |
| revenues ( $y_l$ )                             | 21.8                    | 18.3                       | 15.3                    | 11.3                       |
| <b>advertising market</b>                      |                         |                            |                         |                            |
| branded good adv. ( $q_{bg}$ )                 | -1.1                    | 27.3                       | -7.1                    | 19.9                       |
| other advertising ( $q_{oa}$ )                 | 39.5                    | 39.5                       | -10.1                   | -10.1                      |
| advertising rate ( $p_a$ )                     | 12.4                    | 12.4                       | 0.0                     | 0.0                        |
| revenues ( $y_a$ )                             | 36.1                    | 50.6                       | -8.4                    | 3.5                        |
| <b>total</b>                                   |                         |                            |                         |                            |
| revenues ( $y$ )                               | 29.6                    | 36.0                       | 2.3                     | 7.0                        |
| <b>circulation (<math>q_l</math>; x 1,000)</b> |                         |                            |                         |                            |
| in 1992  | 4629                    | 4629                       | 4629                    | 4629                       |
| in 2000  | <u>4767</u>             | <u>4826</u>                | <u>4405</u>             | <u>4467</u>                |
| $q_l(2000)-q_l(1992)$                          | 138                     | 197                        | -224                    | -162                       |

Explanatory note: the low (high) economic growth scenario assumes a 0%(2.5%) annual growth of C, a -1%(2%) annual growth of I, a 0%(3%) annual growth of K, and a 0%(-5%) annual growth of U; the (no) expansion of tv advertising scenario assumes a 5%(0%) annual growth of the volume of tv advertising.

Because the economic position of newspapers is influenced by so many factors in a complex way, we used the results from section 4 to do some simulations.

At this moment, in the beginning of the 1990s, Dutch newspapers find themselves in a difficult economic position. There are mainly two circumstances that are often mentioned as a reason for this. First, the Dutch economy is in a recession. Second, advertising on television is expanding rapidly due to the introduction of commercial television.

In our simulations we are looking at the future, investigating to what extent macro-economic developments and tv advertising are influencing the economic position of Dutch newspapers. We distinguish 4 scenarios: high economic and low economic growth, both combined with high and low growth of tv advertising. In the high (low) growth scenario we assume a high (low) growth of investment, consumption, and production cost, and we suppose unemployment to fall (rise). Of course, it is possible that the growth of tv advertising is also related to

the macro-economic growth. But, tv advertising in the Netherlands may have its own momentum. Besides, we want to make a clear distinction between the effect of economic growth and the effect of tv advertising.

Table IV shows the results of the simulations with these scenarios over the period 1992-2000. Only in the worst scenario, low economic growth and considerable expansion of tv advertising in the nineties, real advertising revenues fall (by 8%). Even in this pessimistic scenario, however, this revenue loss is offset by a large real price increase on the readers market. Real revenues on the readers market increase in all scenarios. This indicates that on average newspaper industry in the Netherlands is quite capable of saving their skin without government interference. The simulations show that newspaper revenues are more sensitive to cyclical downswings than to the expansion of tv advertising. Low economic growth also decreases total newspaper circulation.

## 6. Conclusions

In this article we investigated the economics of Dutch newspapers. We analysed both the readers and the advertising markets. From this analysis we conclude that revenues from both markets are mainly influenced by macro-economic developments. Modelsimulations show that the influence of tv advertising on newspaper revenues from the advertising market is negative but limited.

If there is a chance that the economic situation of Dutch newspapers deteriorates due to macro-economic developments, the most obvious way out for the industry is to increase the price per copy. Given the small price elasticity, this will lead to a small reduction in total newspaper circulation. The simulations show that this way real revenues can increase even under low economic growth and a considerable expansion of tv advertising.

However, our simulations refer to the total newspaper industry and do not reveal the economic situation of individual newspapers. The reduction of total circulation in our most pessimistic scenario is about 5% on average. While this decline may not be much on average, it is possible that particular newspapers suffer substantially more. Furthermore, low income groups of readers may suffer more than high income groups from real price increases. We also neglected developments in market structure, or in particular concentration tendencies. It is quite possible that under harsh circumstances newspaper

industry can only survive by increasing concentration on the newspaper markets.

Our conclusion is twofold. First, on average, even in bad economic situations newspaper industry seems to be quite capable of taking care of business. Second, in some circumstances problems may arise for specific newspapers or groups of readers. Whether or not these problems should induce the Dutch government to give financial support to the newspaper industry is a matter of policy evaluation. Our analysis suggests that government intervention should not aim at stimulating the branch as a whole, but to give firm specific financial support in order to maintain newspaper diversity.

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## Appendix. Symbols and data

The following variables were used in statistical analysis:

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| symbol     | meaning  |
|------------|--|
| $y_1$      | real revenues on readers market                            |
| $p_1$      | price on readers market                                    |
| $q_1$      | circulation  |
| $y_a$      | revenues on advertising market                             |
| $p_a$      | advertising rate   |
| $q_{bg}$   | volume of branded goods advertising                        |
| $q_{ot}$   | volume of other goods advertising                          |
| $q_{ster}$ | volume of tv (STER) advertising                            |
| $p_{ster}$ | price of tv (STER) advertising                             |
| $y_{dm}$   | spendings on direct mail advertising                       |
| C          | volume of household consumption                            |
| I          | volume of gross investments in capital goods by businesses |
| U          | unemployment   |
| k          | real production cost indicator                             |

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Information on these series was provided by

- Admedia: *Nederland en zijn media (The Netherlands and its media)*, Admedia BV, Amsterdam, several years,
- BBC: *Reclame in cijfers (Advertising in figures)*, Bureau voor Budgettencontrole, Amsterdam, several years,
- CBS: *Sociaal-economische maandstatistiek (Socio-economic monthly statistics)*, Centraal Bureau voor de Statistiek/Staatsuitgeverij, The Hague, several months (before 1984 *Sociale maandstatistiek*),
- CPB (CEP): *Centraal economisch plan (Central Economic Plan)*, Centraal Planbureau/SDU Uitgeverij, The Hague, several years,
- CPB (LMR): *Lange macrorreeksen (Long run macroeconomic series)*, Centraal Planbureau, The Hague,
- NDP: *De Nederlandse Dagbladders in 1991 (The Dutch daily press in 1991)*, annual report of Vereniging de Nederlandse Dagbladders, Amsterdam, 1991, and other years,
- STER: *annual reports*, Stichting Ether Reclame, Hilversum, several years, and
- VEA: *Reclamebestedingen in Nederland (Spendings on advertising in the Netherlands)*, Nederlandse Vereniging van Erkende Reclame-

Adviesbureaus, Amsterdam, several years.

Only yearly figures were used. All nominal figures were deflated by the consumer price index (source: CEP). Information on  $y_a$  and  $y_l$  is provided by NDP. For  $p_l$  the quarterly subscription rate is used, for  $p_a$  the 5000 mm advertising rate (source: NDP). Data on  $q_{bg}$  are constructed by dividing branded goods advertising revenue (source: BBC) by  $p_a$ . In the same way data on  $q_{ot}$  are constructed. Cost indicator  $k$  is the hourly wage rate of senior male production workers in the graphical industry (source: CEP).  $C$  and  $I$  are indices of volume figures provided by CEP.  $U$  is the number of unemployed job seekers in labour years (source: LMR).  $q_{ster}$  is the supply of advertising space on public television in seconds, which always exceeded demand (source: STER).  $p_{ster}$  is the price per second of this advertising (source: STER).  $y_{dm}$  is constructed from figures provided by Admedia and VEA.